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Regional Assessment of Facial Nerve Paralysis Using Optical Flow Method



Wan Syahirah W. Samsudin, Rosdiyana Samad, Kenneth Sundaraj,
Mohd Zaki Ahmad and Dwi Pebrianti

Abstract The face composed of variation of facial muscles which are responsible to interact through the expressions. The facial nerve contains approximately 10,000 of fibers and any damage to these facial nerve will affects all of muscles associated with facial expressions. Thus, it is one of the most extensive destruction in peripheral nerve injuries which demanded for rapid and accurate commencement of assessment to a better treatment and rehabilitation. The traditional methods involved the subjective assessment of medical professionals which may lead to observer error and acquired different decisions on treatment method. However, an ideal and good objective assessment system is still have to rely on a standardized scale to make it more fits to clinicians' use for daily applications. In this study, a diagnosis system for the quantitative assessment of facial nerve paralysis has been proposed using optical flow method which provides the degree of precise movements based on House-Brackmann system on each regional parts of face. The system is not only provided the right-left ratio of facial movement to present the side of paralysis, but also offered the regional score for each movements which lead to total score and afforded the most important highlighted scores, which is the House-Brackmann score for each subjects. The regional scores by using the distance measurement has shown the most outstanding result, at about 98% in classifying the patients and may become a great aid to clinicians in determining the condition of patients from the offset of the paralysis.

Keywords Facial paralysis · Facial nerve assessment · Bell's palsy · Optical flow Kanade-Lucas-Tomasi (KLT) · House-Brackmann system

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